CASSETTE CAR STEREO
WITH FM/MW/LW ELECTRONIC TUNER

KEH-3500
KEH-2500

OWNER'S MANUAL

Thank you for purchasing this PIONEER product. Before attempting operation, be sure to read this manual.

Grazie per aver acquistato questo prodotto PIONEER. Leggere attentamente queste istruzioni prima di usare questa unità.

Vi tackar dig för att du valt denna PIONEER-procukt. Läs först igenom denna bruksanvisning innan apparaten tas i bruk.

Takk for kjøpet av dette PIONEER-produktet. Les denne bruksanvisningen grundig før du tar apparatet i bruk.

Kiitos PIONEER-tuotteen hankinnasta. Ennen käyttöä pyydämme kuitenkin lukemaan huolellisesti tämän käsikirjan.

Muito obrigado por comprar este produto PIONEER. Leia este manual de instruções completamente antes de usar a unidade.

KEH-3500

PIONEER®

The Art of Entertainment

ENGLISH
CONTENTS

Fig. 1 ~ Fig. 3 3
Composition of manual 4
Precautions 4
Connecting the Units 5
Installation 6
Using the Removable Front Panel 8
Using the Radio 9
Using the Tape Deck 11
Specifications 13

ITALIANO
INDICE

Fig. 1 ~ Fig. 3 3
Struttura del manuale 14
Precauzioni 14
Collegamento dell'unita 15
Installazione 16
Utilizzo del pannello frontale rimovibile 18
Uso della radio 19
Uso del mangianasti 21
Caratteristiche 23

SVENSKA
INNEHÅLL

Fig. 1 ~ Fig. 3 3
Bruksanvisningens uppställning 24
Försiktighetsregler 24
Anslutning av komponenterna 25
Montering 26
Bruk av den flyttbara frontpanelen 28
Radiolyssning 29
Bandavspelning 31
Specifikationer 33

NORSK
INNHOLD

Fig. 1 ~ Fig. 3 3
Bruksanvisningens sammensetning 34
Forsiktighetsregler 34
Sammenkopling av komponentene 35
Montering 36
Hvordan bruke det avtagbare frontpanelet 38
Betjening av radioen 39
Betjening av båndspilleren 41
Tekniske data 43

SUOMI
SISÄLTÖ

Fig. 1 ~ Fig. 3 3
Ohjekirjan kookoonpano 44
Varottavia asioita 44
Liitännät 45
Asentaminen 46
Irrotettavan säädinpaneelin käyttö 48
Radion kuunteleminen 49
Kasettidekin käyttäminen 51
Tekniset tiedot 53

PORTUGUÊS
ÍNDICE

Fig. 1 ~ Fig. 3 3
Modelos cobertos por este manual 54
Precauções 54
Ligação das unidades 55
Instalação 56
Utilização do painel frontal removível 58
Uso do rádio 59
Uso do leitor de cassetes 61
Especificações 63

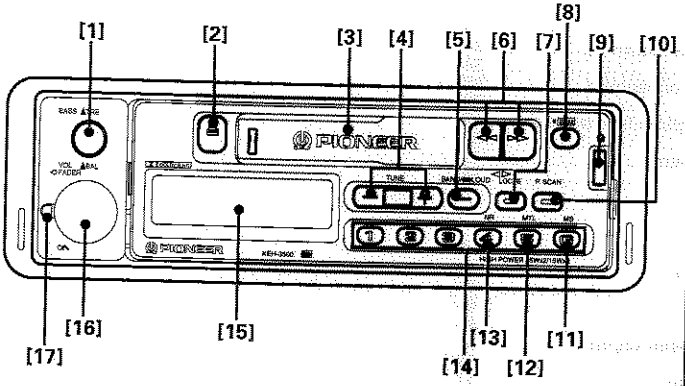


Fig. 1

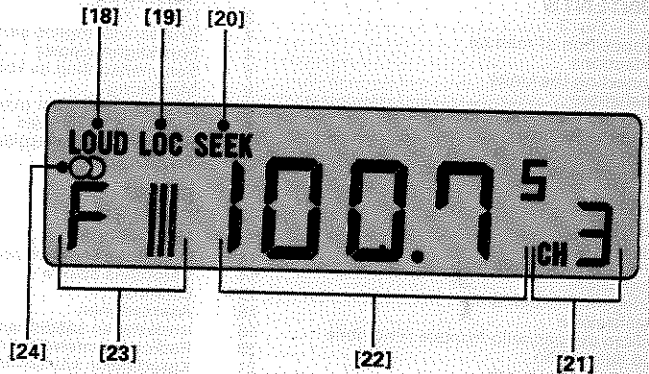


Fig. 2

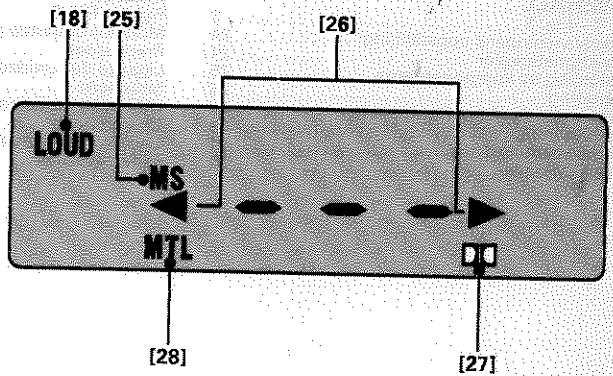


Fig. 3

Composition of manual

This manual applies to the KEH-3500, KEH-2500.
However, the illustrations show the KEH-3500. The KEH-2500 have following features which differ to the KEH-3500.

KEH-2500
Does not include Dolby B NR, tape selector and music search functions.

Precautions

- *While driving keep your listening volume at a level which does not mask important outside traffic noises, such as emergency vehicles, etc.*
- *Never remove the top case of the unit to attempt check or repairs. If operation of the unit is abnormal, contact your dealer or the nearest Pioneer Service Station.*
- *If the car's battery is disconnected for any reason, the preset memory will be erased and must be reprogrammed after reconnection of the battery.*

> ***In case of trouble***
> *When the unit does not operate properly, contact your dealer or the nearest authorized PIONEER Service Station.*

- **Electronic Tuner**

Frequency allocation differs depending upon the area. This unit has been designed in accordance with the frequency allocations for Western Europe, Asia, the Middle and Near East, Africa, Australia and Oceania. Use in other areas may result in improper reception of AM.

Connecting the Units

Note:

- *This unit is for vehicles with a 12-volt battery and negative grounding. Before installing it in a recreational vehicle, truck, or bus, check the battery voltage.*
- *To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.*
- *Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.*
- *Secure the wiring with cable clamps or adhesive tape. To protect the wiring, wrap adhesive tape around them where they lie against metal parts.*
- *Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake, and seat rails. Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.*
- *Do not shorten any leads. If you do, the protection circuit may fail to work when it should.*
- *Never feed power to other equipment by cutting the insulation of the power supply lead of the unit and tapping into the lead. The current capacity of the lead will be exceeded, causing over heating.*
- *Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.*
- *Replace fuses only with the types stipulated on the fuse holder.*
- *Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.*
- *Speakers connected to this unit must be high-power types possessing minimum rating of 25W and impedance of 4 to 8 ohms. Connecting speakers with output and / or impedance values other than those noted here can damage the speakers.*

(Fig. 4)

1. Antenna jack
2. Black (ground)
   To vehicle (metal) body.
3. Red
   To electric terminal controlled by ignition switch (12 V DC) ON / OFF.
4. Orange
   To terminal always supplied with power regardless of ignition switch position.
5. Fuse resistor
6. Fuse holder
7. Green
8. Gray
9. Green / black
10. Gray / black
11. Green / red
12. Gray / red
13. Front / left speaker
14. Front / right speaker
15. Rear / left speaker
16. Rear / right speaker
17. With a 2 speaker system, connect to the 2 speakers in the front or the rear.
18. Blue
    KEH-2500
    Auto-antenna relay control terminal (Max. 300 mA 12 V DC).
    KEH-3500
    To system control terminal of the power amp or Auto-antenna relay control terminal (Max. 300 mA 12 V DC).

KEH-3500

19. Rear out
20. Red
21. White
22. Connecting cords with RCA pin plugs (sold separately)
23. Blue
24. Power amp (sold separately)
25. Use this for connections when you have the separately available amplifier.

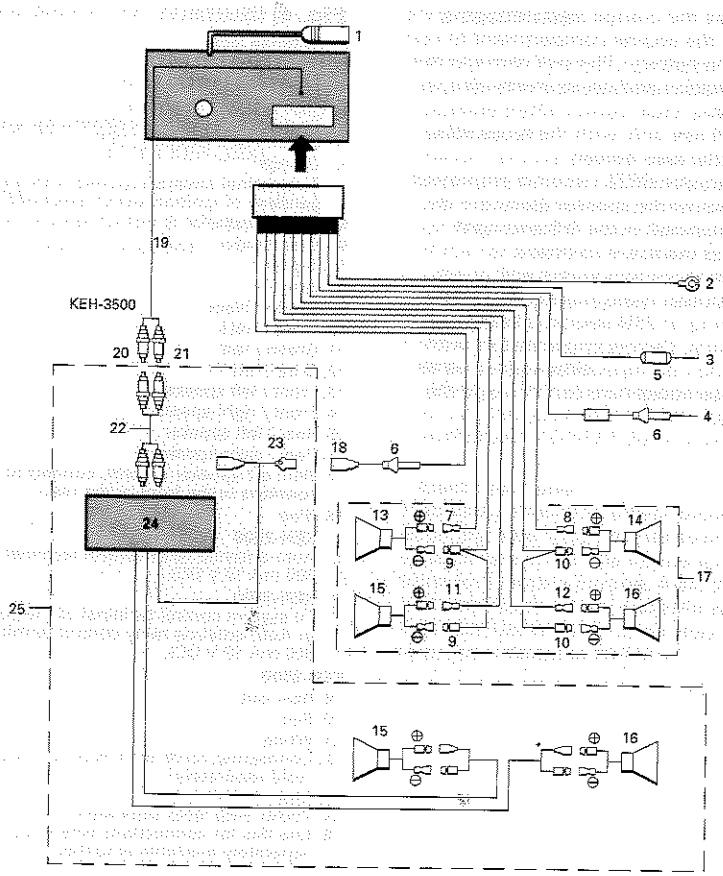


Fig. 4

Installation

Note:

- *Consult with your nearest dealer if installation requires the drilling of holes or other modifications of the vehicle.*
- *Before finally installing the unit, connect the wiring temporarily and make sure it is all corrected up properly and the unit and the system work properly.*
- *Use only the parts included with the unit to ensure proper installation. The use of unauthorized parts can cause malfunctions.*
- *Install the unit where it does not get in the driver's way and cannot injure the passenger if there is a sudden stop, like an emergency stop.*
- *If installation angle exceeds 30° from horizontal, the unit might not give its optimum performance. (Fig. 5)*

Fig. 6

1. Dashboard
2. Holder
   After inserting the holder into the dashboard, select the appropriate tabs according to the thickness of the dashboard material and bend them inwards to secure the holder in place.
3. Rubber bush
4. Screw

Removing the unit (Fig. 7)

5. Insert till the tab of the lever catches onto the metal fixture of the unit.
   (Point the tab of the lever upward.)
   The unit can be released from the dashboard by pulling the lever.
6. After removing the unit, pull out the lever, following step ①, ② shown above.
7. Tab

Fig. 5

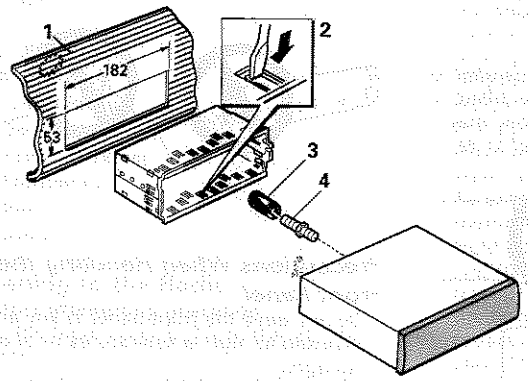
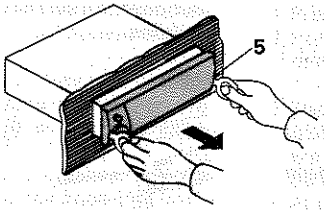


Fig. 6



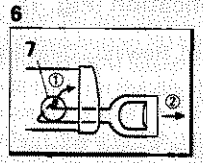


Fig. 7

Using the Removable Front Panel

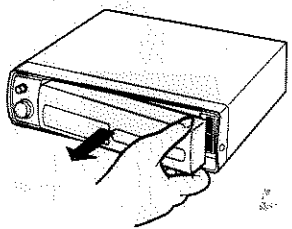
The front panel of this unit can be removed to prevent theft.

Parts Identification (Fig. 1)

[2] Eject
[6] Fast Forward, Rewind / Direction Change
[9] Detach button

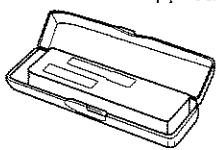
Detaching the Front Panel

1. Press button [9], and the right-hand side of the panel will eject.
2. To remove the front panel, pull its right-hand side toward you.



- *Take care not to put pressure on the display or drop the front panel.*

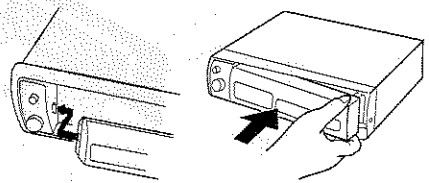
3. Enclose for safekeeping the front panel that is removed in the supplied protective case.



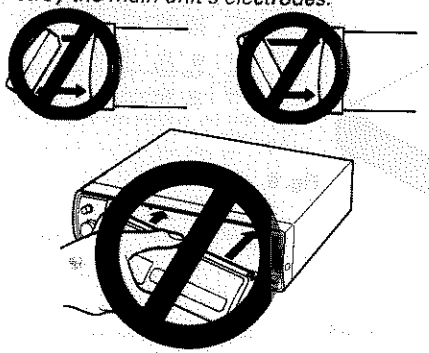
Replacing the Front Panel

With a hollow in the left-hand end of the front panel aligned to projections on the left-hand front wall of the equipment, press the panel's right-hand side against the equipment to put it into place.

- *When replacing the front panel, do not put pressure on the display or control buttons.*



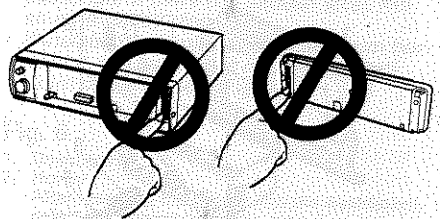
- *Install the front panel holding it parallel to the main unit. Installing the panel tilted, as shown in the illustrations below, may cause the hook on the front panel to destroy the main unit's electrodes.*



- *Do not install the front panel while holding down buttons [2], [6] and [9] in Fig.1. Doing so may destroy the buttons and the main unit.*
- *Note that if the front panel is not attached correctly, pushing button [9] may not release the panel, and the other control buttons may not function.*

Precautions

- *Do not touch the contacts on the front panel or on the unit body, since this may result in poor electrical contact. If dirt or other foreign substances get on the contacts, wipe them with a clean, dry cloth.*



Precautions When Handling the Front Panel

- *Do not leave the front panel in any area exposed to high temperatures or direct sunlight.*
- *Do not drop the front panel or otherwise subject it to strong impact.*
- *Do not allow such volatile agents as benzine, thinner, or insecticides to come into contact with the surface of the front panel.*
- *Never try to disassemble the front panel.*

Using the Radio

Parts Identification (Fig. 1)

[1] Bass / Treble
[4] Tuning
[5] Band / Loudness
[7] Local Station
[8] Best Stations Memory (BSM)
[10] Preset Scan
[14] Preset
[15] Display
[16] Volume / Balance / Power Switch
[17] Fader

(Fig. 2)

[18] Loudness
[19] Local Station
[20] Seek
[21] Preset Number
[22] Frequency
[23] Band
[24] Stereo

Listening to the Radio

- **Before attempting operation...**
- Set the fader control [17] to the left horizontal.

1. Turning the power switch [16] to the right causes power to switch ON and the current frequency to appear on the display [22].

- Since the set is designed preferentially for tape play, eject a cassette tape, if mounted, before operating the radio.

2. Press the button [5] to select the band.

- Switching between FM and MW / LW is controlled by the band switch. Switching between LW and MW is accomplished using the tuning button. The MW band is from 531 kHz to 1,602 kHz, and the LW band is from 153 kHz to 281 kHz.

3. Press both ends of the button [4] and the seek tuning indicator will appear on the display [20].
4. Press either the left or right side of the button [4] to tune in the desired frequency. (Pressing the right side will increase the frequency.)
5. Adjust the volume and balance. To adjust the balance, first pull the knob [16] until a click is heard. After setting to the desired level, push the knob [16] in again to its original position.
6. Adjust the tone [1]. To adjust the treble, first pull the knob [1] until a click is heard. After setting to the desired level, push the knob [1] in again to its original position.

- **To enter a frequency into the preset memory...**

7. Hold down one of the buttons in Bank [14] for approximately 2 seconds. The frequency is stored in memory (assigned to the button in Bank [14] pressed) once the preset number stops flashing on the display [21].
   6 FM1 frequencies, 6 FM2 frequencies, 6 FM3 frequencies and 6 MW and LW frequencies can be entered.

BSM (Best Stations Memory)

This function automatically locates stronger stations and automatically assigns their frequencies to the buttons in Bank [14], from strongest to weakest. It comes in handy when trying to find local stations while driving.

1. Press button [5] and select a band.
2. Holding down button [8] for about 2 seconds will start BSM search. At this time, "- - -" will flash on the display.
3. The frequency display will return once BSM search is complete, and frequencies are assigned to buttons 1 through 6 in Bank [14].

- At the end of the BSM search, the displayed frequency is that assigned to button 1 of Bank [14].
- If there are fewer than 6 strong stations in the area, some of the buttons in Bank [14] will not be assigned frequencies, so they will retain any frequencies assigned to them previously.
- BSM search may take as long as 30 seconds in areas where there are few strong stations.
- You can cancel BSM search by pressing button [8] again.

ENGLISH

Fader Control

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system. Turning the control [17] to the upward decreases the volume of the rear speakers, while turning it to the downward decreases the volume of the front speakers with 2-speaker systems, set this control [17] to a horizontal.

Loudness Control

When playing back a tape or listening to the radio at low volume, the low tone is emphasized and more clearly heard by pressing 2 seconds this switch [5].

Preset Scan Tuning

This function lets you automatically monitor the stations assigned to the preset buttons.

1. Press the button [10], and the preset number [21] flash.
   Each station assigned to the buttons in Bank [14] will be automatically tuned in for about 8 seconds.
2. When you hear a station that you like, press button [10] again to cancel preset scan tuning and remain at that station.

Adjusting Seek Sensitivity

The seek tuning function of this tuner lets you select between a local setting for reception of strong stations only, and a DX (distant) setting for reception of weaker stations. The local setting also has four seek tuning sensitivity levels for FM and 2 levels for MW / LW to match local conditions.

Changing the Local Seek Sensitivity

1. Use button [5] to select a band.
2. Hold down the button [7] for more than 2 seconds, and the display will show you the current local seek sensitivity for about 5 seconds.
3. While the local seek sensitivity remains on the display, press the (+) side of button [4] to increase the sensitivity level, and the (–) side to decrease the level as shown below.
   FM : L-1 ⇄ L-2 ⇄ L-3 ⇄ L-4
   MW / LW : L-1 ⇄ L-2
   The L-4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.

- The display of local seek sensitivity returns to the frequency when about 5 seconds have elapsed after the change of sensitivity.

Switching between Local and DX

Press button [7] to switch between Local and DX (distant) seek tuning.
When "LOC" [19] is shown on the display, seek tuning is performed with the local seek sensitivity. Otherwise, seek tuning is performed with the DX seek sensitivity.

Manual Tuning

Use manual tuning when stations are too weak to be picked up by seek tuning.

1. Press both (+) and (–) sides of button [4] at the same time to clear "SEEK" [20].
2. Each press of the (+) side of button [4] increases the frequency in 50 kHz steps in the FM band, 9 kHz in the MW band and 1 kHz in the LW band. Pressing the (–) side of button [4] decreases the frequency. Holding down either side of button [4] changes the frequency at high speed.

Using the Tape Deck

Parts Identification (Fig. 1)

[1] Bass / Treble
[2] Eject
[3] Cassette Door
[5] Loudness
[6] Fast Forward, Rewind / Direction Change
[11] Music Search (KEH-3500)
[12] Tape Select (KEH-3500)
[13] Dolby B NR (KEH-3500)
[15] Display
[16] Volume / Balance / Power Switch
[17] Fader

(Fig. 3)

[18] Loudness
[25] Music Search (KEH-3500)
[26] Direction
[27] Dolby B NR (KEH-3500)
[28] Metal (KEH-3500)

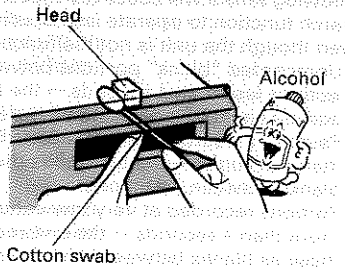
About cassette tapes

- *Do not use tapes longer than C-90-type (90 min.) cassettes. Longer tapes can interfere with tape transport.*
- *Storing cassettes in areas directly exposed to sunlight or high temperatures can distort them and subsequently interfere with tape transport.*

- *Store unused tapes in a tape case where there is no danger of them becoming loose or being exposed to dust.*

Cleaning the head

If the playback head becomes dirty, sound quality will suffer. Periodically (once or twice a month) clean the head with a cotton swab soaked with alcohol.



Listening to a tape

- **Before attempting operation...**
- Set the fader control [17] to the left horizontal.

1. Turning the power switch [16] to the right causes power to switch ON.
2. Loading a cassette tape into the load slot [3] causes playback to begin automatically.
3. Adjust the volume and balance. To adjust the balance, first pull the knob [16] until a click is heard. After setting to the desired level, push the knob in [16] again to its original position.
4. Adjust the tone [1]. To adjust the treble, first pull the knob [1] until a click is heard. After setting to the desired level, push the knob [1] in again to its original position.
5. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, press the button [2].

- *A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.*
- *Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.*
- *Loose tapes should be rewound with the aid of a pencil and unevenly wound tapes rewound with the use of the fast forward function.*

- *Be sure to eject the tape when the vehicle's ignition is turned OFF. Leaving the tape in the unit can deform the pinch roller causing wow and flutter during tape playback.*

Changing Program

Push the fast forward and rewind buttons [6] together to switch from one side of the tape to the other (from Side A to Side B or vice versa).

Using Fast Forward and Rewind

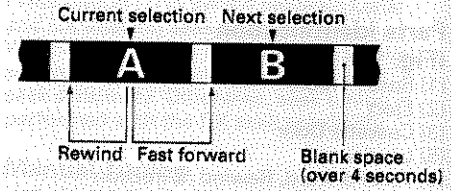
Since the transport can be in either direction, both the left and right high-speed tape transport buttons [6] can be regard as fast forward / rewind buttons. For fast forward, press the high-speed tape transport button [6] that corresponds to the direction that is shown by the direction indicator [26]. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse). For rewind, press the button [6] that is opposite that of the direction shown by the direction indicator [26]. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).
When you release fast forward / rewind, lightly press button [6] located on the opposite side of the one you pressed to fast forward or rewind.

Using Music Search (KEH-3500)

Returning to the beginning of selection A
Press the button [11] ("MS" [25] appears) and then the high-speed tape transport button [6] for the direction opposite that is shown by the direction indicator [26]. Playback will automatically start from the beginning of selection A.

Moving from selection A to selection B
Press the button [11] ("MS" [25] appears) and then the high-speed tape transport button [6] that corresponds to the direction shown by the direction indicator [26]. Playback will automatically start from the beginning of selection B.
To enable regular fast forward / rewind operations, press the button [11] again ("MS" [25] turns off) to turn the function OFF. The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded "blank" portions between selections less than 4 seconds — the blank portion cannot be detected by the unit.
- Pauses in recorded conversations longer than 4 seconds — the unit reads these as blanks between selections.
- Portions recorded at very low volume for more than 4 seconds — the unit reads these as blanks between selections.



Dolby B NR (KEH-3500)

To hear a tape recorded using a Dolby NR system, press the button [13]. ("DD" [27] appears.)

- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
  "DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

Tape Selector (KEH-3500)

When using metal tapes and chrome tapes, press button [12]. ("MTL" [28] appears.)

Specifications

General

Power source ..... 14.4 V DC (10.8 — 15.6 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 5.6 A
Dimensions (chassis) ..... 180(W) × 50(H) × 150(D) mm
(front face) ..... 188(W) × 58(H) × 17.4(D) mm
Weight ..... 1.4 kg

Amplifier

Maximum power output ..... 25 W × 2/15 W × 4 (EIAJ)
Continuous power output ..... 11 W × 2 (1% dist. at 1 kHz)
Load impedance ..... 4Ω (4 — 8Ω allowable)
Preout output level / output impedance
(KEH-3500) ..... 500 mV/1 kΩ
Tone controls (bass) ..... ±10 dB (100 Hz)
(treble) ..... ±10 dB (10 kHz)
Loudness contour ..... +8 dB (100 Hz) (Volume: –30 dB)

Tape player

Tape ..... Compact cassette tape (C-30 — C-90)
Tape speed ..... 4.8 cm/sec.
Fast forward / rewind time ..... Approx. 100 sec. for C-60
Wow & flutter ..... 0.13% (WRMS)
Frequency response
(KEH-3500) ..... Metal: 40 — 17,000 Hz (±3 dB)
(KEH-2500) ..... 40 — 14,000 Hz (±3 dB)
Stereo separation ..... 45 dB
Signal-to-noise ratio
(KEH-3500) ..... Metal: Dolby B NR IN: 63 dB (IEC-A network)
Dolby NR OUT: 55 dB (IEC-A network)
(KEH-2500) ..... 52 dB (IEC-A network)

FM tuner

Frequency range ..... 87.5 — 108 MHz
Usable sensitivity ..... 11 dBf (1.0μV/75Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity ..... 16 dBf (1.7μV/75Ω, mono)
Signal-to-noise-ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 — 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range ..... 531 — 1,602 kHz
Usable sensitivity ..... 18μV (25 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

LW tuner

Frequency range ..... 153 — 281 kHz
Usable sensitivity ..... 30μV (30 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

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